Article 34



## CLAIMS

1. A method of detecting a cell type of interest present or potentially present in a sample comprising treating the sample with lipid vesicle particles which are targeted to the cell type to be detected, said particles incorporating a cytolytic peptide that modulates the permeability of the particles in response to a predetermined metabolic signal from the targeted cell, if present in the sample, said particles further incorporating a species which is activated on said modulation of permeability, and monitoring directly or indirectly for the species.

2. The method according to claim 1 wherein the particles comprise a binding agent capable of binding the particle to the cell type of interest when the particle is targeted thereto.

3. The method according to claim 2 wherein the binding agent is an antibody for binding to an antigen on the cell type of interest.

4. The method according to ~~any preceding~~ claim 1 wherein a portion of said particles have a first binding moiety and a further portion have a second binding moiety which is capable of binding with said first binding moiety whereby said particles are, or are capable of being, aggregated together.

5. The method according to claim 4 wherein a collection of particles are aggregated around a cell to be detected.

6. The method according to claim 4 ~~or 5~~ wherein the binding moiety on some particles is avidin or a derivative thereof and the binding moiety on other particles is biotin or a derivative thereof.

7. The method according to ~~any preceding~~ claim 1 wherein the cytolytic peptide is selected from the group consisting of GALA, Helical erythrocyte lysing peptide (HELP), KALA and LAGA.

8. The method according to ~~any one of claims 1 - 6~~ claim 1 wherein the cytolytic peptide is N, Myristic-GALA.

9. The method according to ~~any one of claims 1 - 6~~ claim 1 wherein the cytolytic peptide is selected from the group consisting of Amphotericin B, Alamethicin, Gramicidin, Melittin, Nigericin, P25, Polymixin B and Valinomycin and Vibriolsin.

10. The method according to ~~any preceding~~ claim 1 wherein the species is a dye.

11. The method according to ~~any one of claims 1 - 9~~ claim 1 wherein the species is an enzyme.

12. The method according to claim 11, wherein the enzyme is alkaline phosphatase, β-Galactosidase or asparaginase, or glucose oxidase.

13. The method according to ~~any one of claims 1 - 9~~ claim 1 wherein the species is a co-factor or substrate for an enzyme.

14. The method according to ~~any preceding claim~~ claim 1 wherein the cells to be detected are pathogenic cells.

15. The method according to claim 14 for analysing foodstuff for the presence of pathogenic cells.

16. The method according to claim 14 for analysing water samples for the presence of pathogenic cells.

17. The method according to claim 14 for detecting the presence of pathogenic cells in the human or animal body.

18. A method of treating a cell type of interest comprising applying lipid vesicle particles to the cell type of interest, said particles being targeted to the cell type of interest and incorporating a cytolytic peptide that modulates the permeability of the particles in response to a predetermined metabolic signal from the targeted cells, said particles further incorporating a species which is activated on said modulation of permeability and which modulates the activity of said cell type of interest.

19. The method according to claim 18 wherein the particle is a particle as defined in any one of claims 2 – 9.

20. The method according to claim 18 ~~or claim 19~~ for treatment of pathogenic cells.

21. The method according to claim 20, wherein the treatment is the removal of pathogenic cells from a water source.

22. The method according to ~~any one of claims 18 – 21~~ claim 18 wherein the cell is a bacterium.

23. A lipid vesicle particle capable of being targeted to a cell type of interest, said particle incorporating a cytolytic peptide which is responsive to a predetermined metabolic signal from the targeted cell so as to modulate the permeability of the particle, said particle further incorporating a species to be targeted to the cell which is activated on said modulation of permeability.

24. The particle according to claim 23, wherein the particle has an outer lipid bilayer and the metabolic signal modulates the permeability of the lipid bilayer.

25. The particle according to claim 23 ~~or claim 24~~ wherein the particle is a liposome.

26. The particle according to ~~any one of claims 23 – 25~~ claim 23 wherein the peptide is one selected from the group consisting of GALA, Helical erythrocyte lysing peptide (HELP), KALA and LAGA.

27. The particle according to ~~any one of claims 23 – 25~~ claim 23 wherein the peptide is N, Myristic-GALA.

28. The particle according to ~~any one of claims 23 – 25~~ claim 23 wherein the peptide is one selected from the group consisting of Amphotericin B, Alamethicin, Gramicidin, Melittin, Nigericin, P25, Polymixin B and Valinomycin and Vibriolsin.

29. The particle according to ~~any one of claims 23 – 28~~ claim 23 wherein the species is an enzyme.

30. The particle according to claim 29 wherein the enzyme is alkaline phosphatase, β-Galactosidase or asparaginase, or glucose oxidase.

31. The particle according to ~~any one of claims 23 – 28~~ claim 23 wherein the species is a co-factor or substrate for an enzyme.

32. The particle according to ~~any one of claims 23 – 31~~ claim 23 wherein the particle comprises an antibody for targeting to an antigen on a cell.

33. The particle according to ~~any one of claims 23 – 32~~ claim 23 wherein the particle further comprises a binding moiety for binding to other particles.

34. A collection of particles according to ~~any one of claims 23 - 33~~ claim 23 wherein a portion of said particles have a first binding moiety and a further portion have a second binding moiety which is capable of binding with said first binding moiety whereby said particles are, or are capable of being, aggregated together.

35. A collection of particles according to claim 34 wherein the first binding moiety is avidin or a derivative thereof and the second binding moiety is biotin or a derivative thereof.

36 An aggregate comprising a collection of particles according to ~~claim 34 or claim 35.~~

37. An aggregate comprising a plurality of lipid vesicle particles according to ~~any one of claims 23 - 33~~ claim 23 wherein a portion of said particles have a first binding moiety and a further portion have a second binding moiety capable of binding with said first binding moiety whereby said particles are aggregated together.

38. A lipid vesicle particle capable of being targeted to a cell type of interest, said particle incorporating a cytolytic peptide which is responsive to a predetermined metabolic signal from the targeted cell so as to modulate the permeability of the particle, said particle further incorporating a therapeutically effective amount of a species to be targeted to the cell which is activated on said modulation of permeability, for use in the treatment of medical conditions.

39. The particle according to claim 38 wherein the particle is a particle according to any one of claims 2 – 9 for use in the treatment of medical conditions.

40. The particle according to claim 38 for use in the treatment of cancer.

41. The particle according to claim 38 for the use in the treatment of microbial infections.